# The distribution of hydrated compounds on the surface of Europa

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Europa's hydrated material, previously identified as hydrated sulfuric acid (Carlson, Johnson, and Anderson, Science 286, 97, 1999) or hydrated salt minerals (McCord et al., Science 280, 1242, 1998; JGR 104, 11827, 1999) has been mapped using multiple observations by Galileo's Near Infrared Mapping Spectrometer (NIMS). A diffuse distribution, modulated by geological features, shows an enhancement on the trailing side (270 W longitude) and diminished concentration for longitudes approaching the leading side at 90 W, where there is little hydrate. The diffuse pattern is similar to sulfur ion implantation profiles estimated by R. E. Johnson et al. (Icarus 75, 423, 1988) and Pospieszalska and Johnson (Icarus 78, 1, 1989), suggesting that implantation provides sulfur to produce sulfate and the observed hydrate. Increased hydrate concentrations in geological features such as lineae may result from subsequent geological processing of implanted material or from an endogenic source of sulfurous material.